REMARKS/ARGUMENTS

The Office Action in the present case was mailed on October 20, 2004, making a response due on or before January 20, 2005. Since this response is being timely submitted, no further fee is thought to be due at this time. If any additional fee is due for the continued prosecution of this application, please charge the same to Applicant's Deposit Account No. 50-2555 (Whitaker, Chalk, Swindle & Sawyer, LLP).

The Examiner issued a restriction requirement in the case, requiring Applicant to elect between apparatus Claims 1-7 in Class 285, subclass 337 and method Claims 8-12 in Class 29, subclass 890.014. Applicant affirms the election to prosecute Claims 1-7, without traverse, and without prejudice toward filing a divisional application containing claims 8-12. Accordingly, Claims 8-12 have been canceled in this response.

The Examiner pointed out a discrepancy in the numbering of the drawings in that the reference characters D1, D2 and D3 were not mentioned in the Specification. Applicant has amended the Specification at page 11, line 2 to include these reference characters, which characters also appear at the top of Table I on the same page. Applicant is also including a replacement sheet showing the sealing gasket being properly crosshatched in Figures 3 and 4. Also enclosed is an annotated sheet containing the proposed drawing corrections in Figures 3 and 4.

The Examiner pointed out an antecedent basis problem with respect to Claim 7 and the phrase "the restraint system." Applicant has amended the dependency of Claim 7 in order to correct the antecedent basis problem.

Claims 1-7 are presently pending in the application. The Examiner has substantively rejected Applicant's Claims 1-7 under 35 U.S.C. §103(a) based upon the reference to Turner (U.S. Patent No. 3,910,610). The Examiner argues that Turner essentially shows all of the elements of Applicant's original Claims 1-7 in the embodiment of the invention shown as Figure 2 of Turner's drawings with

the exception of the pipes being formed of different materials such as polyethylene and PVC or ductile iron. In fact, the presently claimed invention differs in both structure and function from the device described in Turner so that, when Turner is properly understood, it is clear that this prior art reference does not render "obvious" the claims as presented in amended form.

There are a number of advantages achieved by Applicant's invention which would not be achieved with the Turner device. Applicant's mechanical joint bell adapter and pipe joint using the adapter significantly simplify the assembly of a section of polyolefin pipe to a section of pipe of a dissimilar material. The integral flange, which is formed of the same material as the remainder of the adapter body, eliminates additional gaskets and gland rings which were required in the past. The rigid reinforcing ring which circumscribes the integral flanges supports the additional radial load needed to keep the polyolefin from bulging and to prevent the gasket from being extruded from the coupling. The reinforcing ring allows the coupling to develop the full gasket load for the connection. These features would not be possible with the Turner type coupling.

In this regard, Applicant respectfully controverts the Examiner's position that the choice of materials for the pipe ends being coupled is not critical to the invention and would be "obvious" to one having ordinary skill in the art. In fact, it is the choice of materials for the respective pipe ends being joined that creates the need for Applicant's invention in the first place. There is a large body of prior art dealing with couplings for joining the ends of iron pipe, such as the coupling shown in the Turner patent cited by the Examiner. For many years, such iron pipe systems dominated in the waterworks industry, such as in municipal pipelines for water and sewage. Today, plastic pipelines are becoming more popular, both in original and retrofit or rehabilitation installations. However, the design considerations for a coupling for a ductile iron pipeline are different from those which come into play with a plastic pipeline. The design engineer generally does not have to worry about "crushing or scoring" the exterior of a ductile iron pipeline. However, with plastic pipelines, a traditional ductile iron coupling might actually crush and collapse or otherwise damage a region of the plastic and compromise the integrity of the pipeline or the coupling.

Further to this point, the design considerations for a polyolefin pipeline differ from those of a PVC pipeline just as they differ from those of an iron pipeline. The work necessary to impose temporary or permanent strain in a thermoplastic material varies with the type of plastic and its viscoelasticity. In this regard, polyethylene and PVC have very different characteristics. PVC tends to be relatively rigid while polyethylene has an elastic "memory" which presents additional challenges in certain end use applications. The material can tend to "creep" and, when deformed by stress, tends to try to return to its original shape. For this reason, the acceptable stress which is imposed by the coupling system in use must take into consideration such factors as the rate at which the material will accept the elastic and viscoelastic strain without damage as well as how to constrain the movement of the material in undesired directions. At the very least, the polyethylene systems are limited by the amount of "scoring" or "crushing" force which can be accepted. These factors might not apply at all to a rigid iron pipeline, such as a ductile iron pipeline of the type used historically in many municipal applications.

Applicant has amended remaining independent Claims 1 and 3 to emphasize the unique aspects of Applicant's coupling system. Claim 1 now more specifically describes the sealing gasket (31 in figures 3 and 4) and its location, as well as the nature and location of the reinforcing ring (41 in Figures 3 and 4). Applicant's integral flange defines a bell end opening for the adapter of the invention, the bell end opening having a first region of reduced internal diameter (29 in Figure 1) for receiving a sealing gasket 31 therein, the sealing gasket being conically profiled when viewed in cross section having an inner extent and an outer extent (emphasis added), the bell end opening also having a second region of further reduced internal diameter (33 in Figure 1) which forms a circumferential shoulder region therein for receiving a male spigot end of a mating pipe which is formed of the different material. Note that with respect to the Turner reference that the sealing ring 26a is not "conically" shaped or profiled since it fits in a differently configured groove within the bell pipe end 24a. It is essentially rectangular in cross section. If gasket 32 is taken to be the "sealing gasket", it is located externally of the bell pipe end.

The location and shape of the sealing gasket and its corresponding receiving surface in the bell pipe end are critical to the functioning of the invention. As the male pipe end (15 in Figure 3) is inserted into the bell pipe end to make up the pipe joint, the sealing gasket is compressed and exerts a downward sealing force on the male pipe end 15. The conically shaped gasket contacts what is in effect a "ramp surface" in the interior of the bell pipe end to assist in the make-up and sealing function. Totally different forces would be at work in the Turner coupling which has an internal lip in the bell pipe end to assist in retaining the gasket 26a.

Applicant's independent Claim 1 has been further amended to specify an "adapter integral flange having a front face, a rear face and an outer peripheral surface, and wherein a metal reinforcing ring is closely received upon and circumscribes the outer peripheral surface forming an outer sleeve thereon in order to strengthen the connection and prevent extrusion of the sealing gasket when the spigot end of a mating male pipe is inserted within the bell end opening of the adapter to form the pipe coupling, the first region of reduced internal diameter forming a sloping conical surface for receiving the conically profiled sealing gasket, the outer extent of the sealing gasket being located approximately flush with the front face of the integral flange of the adapter (emphasis added)."

As the claim was originally written, the language may have been broad enough to encompass a "reinforcing ring" such as the element 28 in Figure 1 of Turner. However, the amended claim language now more clearly specifies the nature and location of the reinforcing ring (41 in Figures 3 and 4 of Applicant's drawings). Applicant's reinforcing ring 41 is in the nature of a "sleeve" which is closely received about the exterior of the pipe bell end to perform a specific function.

Note the differences in the forces being exerted in the Turner system and those being exerted in Applicant's system. The "gland" arrangement 34 in Turner exerts longitudinal forces along the direction of the pipe axis. Applicant's reinforcing ring 41 exerts a radial restraining action upon the material of the bell pipe end.

As has been briefly explained, during joint make-up, it is necessary that Applicant's gasket 31 be squeezed in order to effect the necessary sealing action. Because of the nature of the polyethylene pipe of the bell pipe end, some type of reinforcement is necessary to prevent the gasket from being extruded from its intended location, or to prevent the bell pipe end itself from being contorted and bulge outwardly. Applicant's conically shaped gasket and complimentary ramp surface in the bell pipe end work together to achieve the desired sealing action. However, without the placement and nature of the reinforcing ring, the coupling would not be able to develop the required radial pressure load and the coupling could fail in use. The particular arrangement of the sealing ring, the sealing ring shape, the shape of the complimentary bell pipe surface and the location and nature of the reinforcing ring all work together to allow Applicant to create a coupling which is much simpler in design, but just as effective as the prior art "MJ" type connections used in the art even where dissimilar materials are being joined. Applicant has provided a simple, reliable and economical coupling which also allows dissimilar materials such as polyethylene and PVC or ductile iron to be securely joined together.

The Examiner will appreciate that the above arguments are all directed to the embodiment of Applicant's invention illustrated as Figure 1, 2 and 3 in the drawings. This simplified arrangement of parts accomplishes the same objective as the prior art more complicated "MJ" arrangements in many situations. If the customer wishes to further supplement the restrained nature of the joint, the additional external components shown in Figure 4 can be utilized. However, these components are not necessary in the simplest and purest form of Applicant's invention illustrated in Figure 1, 2 and 3.

Based upon the above arguments and amendments, Claims 1-7 are thought to be allowable over the art of record and an early notification of the same would be appreciated.

Please charge any additional fees which may be due for the continued prosecution of this application to Applicant's Deposit Account No. 50-2555 (Whitaker, Chalk, Swindle & Sawyer, LLP).

Respectfully submitted,

Date: Dec 17, 2004

Charles D. Gunter, Jr.
Reg. No. 29,386
Whitaker, Chalk, Swindle& Sawyer, LLP
301 Commerce St, Suite 3500
Fort Worth, Texas 76102-4186
(817) 878-0504
ATTORNEY(S) FOR APPLICANT

F:\STOR\CDG\IPP\PATENTS\PATRES\01AM.WPD

Amendments to the Drawings:

The attached sheet of drawings includes changes to Figures 3 and 4. This sheet replaces the original sheet 1 which included Figures 3-4. In Figures 3 and 4, the sealing gasket 31 has been properly crosshatched.

Attachment: Replacement sheet 1

Annotated Sheet 1 Showing Changes

Attachment

Annotated Sheet

Proposed Drawing Correction

S.N. 10/743,395

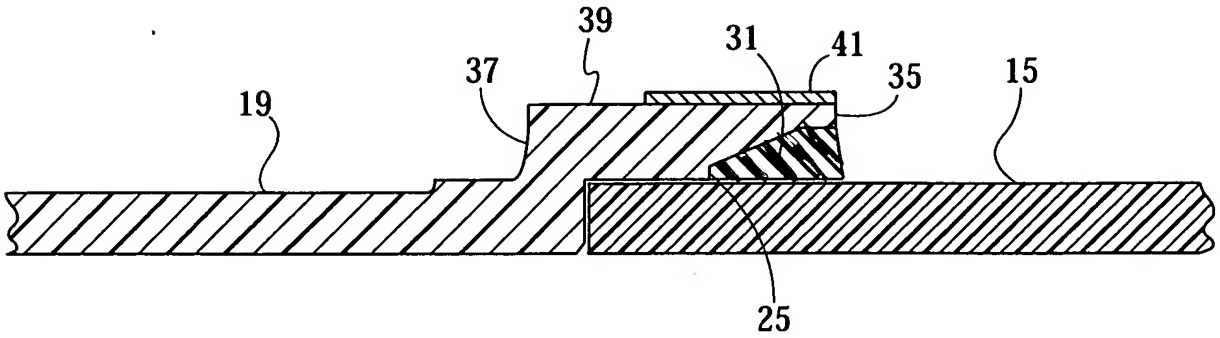

Fig. 3

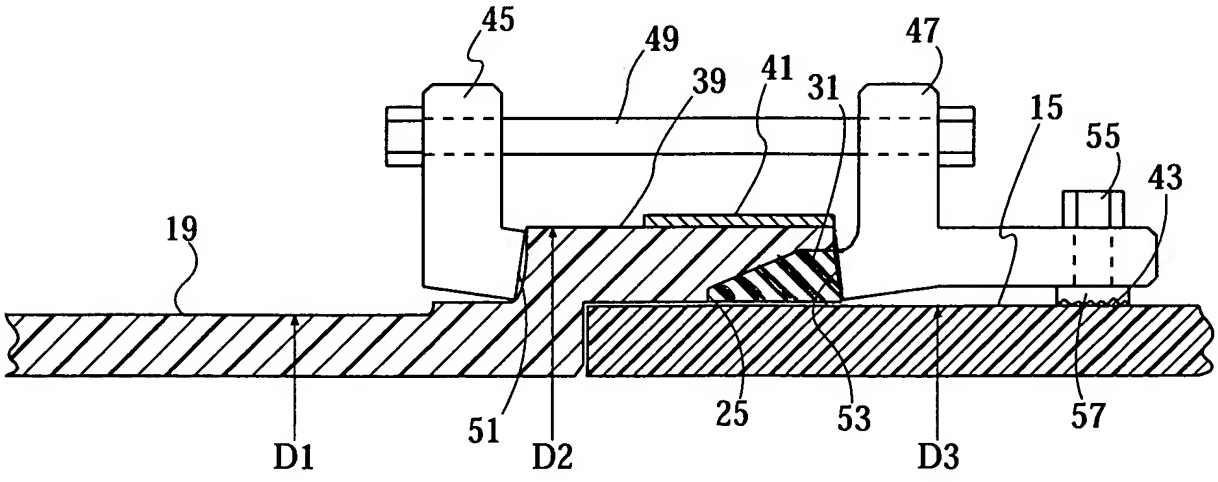

Fig. 4